

1 SURFACE PREPARATION

1.1 METALLIC SURFACES

APPLY ONLY TO CLEAN, FIRM, AND ROUGHENED SURFACES

- Brush away loose contamination and dirt.
- If application is underwater, remove any marine growth prior to application.
- Degrease with **Belzona 9111** (Cleaner/Degreaser) or any other effective cleaner which does not leave a residue e.g., methyl ethyl ketone (MEK).
- Remove loose rust, if any, with wire brush or power tools.
- Roughen surfaces with file or power tools, especially around the edges of the through-wall defect and 360° around the piping. Stabilize cracks by drilling the extremities. Long cracks should be drilled, tapped, and bolted every 3 – 4 in. (77 – 103 mm).
- Vee-out all cracks using a rotary file.
- Finally, degrease again as in c) above.
- Use clean lint-free rags to avoid spreading contamination.

1.2 PLASTIC SURFACES (e.g., PVC and fiberglass)

- Undercut fine edges with a sharp knife and use coarse-grit sandpaper or any suitable roughening tools to score a crosshatch pattern.
- Brush away any loose contamination.
- Wash the surface with soapy water.

1.3 AREAS PREVIOUSLY TREATED WITH BELZONA 9611

- Roughen **Belzona 9611** using a rotary wire brush, hacksaw blade, or any suitable roughing tool.
- Brush away any loose contamination.
- Degrease with **Belzona 9111** (Cleaner/Degreaser) or any other effective cleaner which does not leave a residue e.g., methyl ethyl ketone (MEK).

2 APPLICATION PROCEDURE

2.1 PREPARATION

- Ensure that the correct size of **Belzona 9631** is accounted for prior to commencement of the application. **Belzona 9631** is supplied in two sizes, 2 in. x 5 ft. (5 cm x 1.5 m) and 4 in. x 15 ft. (10 cm x 4.6 m), in foil pouches.
- Also, account for the required number of pouches to complete the application. Keep in mind that a minimum 9-layer wrap of **Belzona 9631** is recommended per application. Follow this guide.

Pipe OD (in.)	Required number of foil pouches for 9 wraps (100% overlap)	
	2 in. x 5 ft.	4 in. x 15 ft.
2.0	1	1
3.0	2	1
4.0	2	1
5.0	3	1
6.0	3	1
8.0	4	2
10.0	5	2
12.0	6	2

- DO NOT open the foil pouch until **Belzona 9631** is ready to be used as the reaction commences on exposure of the pre-impregnated composite to atmospheric moisture.
- Account for a garden pump sprayer, squeeze bottle, spray bottle, or similar water-spraying device, and fill with clean room-temperature water.

2.2 WORKING LIFE

After contact with water (activation), **Belzona 9631** must be used within the times shown below.

Temperature	41 °F (5 °C)	59 °F (15 °C)	77 °F (25 °C)	104 °F (40 °C)
Use material within	12 min.	6 min.	3 min.	2 min.

Note: In elevated ambient temperatures, it is recommended that the foil pouches of **Belzona 9631** be kept in the shade and away from direct sunlight prior to opening and installation. Coolers with ice can also be used.

2.3 HAND APPLICATION

FOR BEST RESULTS

Do not apply when:

- The temperature is below 41 °F (5 °C).
- The working environment is likely to be contaminated by oil/grease from adjacent equipment or smoke from kerosene heaters or tobacco smoking.

- Wet both piping and repair area with water.
- Using gloved hands, open the foil pouch, and remove the **Belzona 9631** roll.
- Immediately, immerse a roll edge section, preferably 10 - 12 in. (25 – 30 cm) long, in clean water (free of visible contaminants) at 41 – 77 °F (5 – 25 °C) for at least 5 seconds to activate **Belzona 9631**.
- Apply the activated edge section onto the repair area ensuring adequate contact with the substrate.
- Using the water-spraying device, spray water onto the underside of the roll of **Belzona 9631** as it is being wrapped around the repair section.
- Apply hand tension (100% overlap) to prevent any entrapped air and to ensure adequate contact with the substrate and between water-activated layers of **Belzona 9631**. Work quickly as **Belzona 9631** sets at a fast speed.
- If necessary, apply in spiral fashion with at least 80% overlap.
- After application is complete, using water-wet gloved hands, smooth the repair as much as possible. Remember, **Belzona 9631** sets quickly.
- A **Belzona** tourniquet or similar can be used to apply additional pressure onto the repair while it cures. Alternatively, a release plastic film (e.g., **Belzona 9382**) may be utilized. If so, light tap the plastic film with a stiff wire brush to allow bubbles generated by the curing process to escape.
- Ensure that a minimum 9-layer wrap of **Belzona 9631** is applied over the damaged area within its working life.
- If **Belzona 9631** hardens before the entire roll is fully applied, cut, and discard hardened remaining portion of the roll.

2.4 APPLICATION OF ADDITIONAL WRAPS

If additional wraps of **Belzona 9631** are applied, repeat steps in Section 2.3 a-k). Apply additional wraps immediately onto **Belzona 9631**.

2.5 ACTIVE LEAK APPLICATION

Belzona 9631 is not recommended for sealing an active leak. In such cases, complete removal of pressure is recommended. If not possible, pressure should be reduced as high as 40 psi (2.8 bar) and **Belzona 9611** should be used in conjunction with a tourniquet to seal the active leak before attempting any repair with **Belzona 9631**. If the repair is to air or gas leakage, it is advised that soap water be sprayed onto the **Belzona 9611** repair to ensure that the leak has stopped, and no gas bubbles are detected prior to wrapping with **Belzona 9631**.

2.6 UNDERWATER APPLICATION

Belzona 9631 can be applied underwater. In this case, the pre-impregnated resin will be activated by fresh or saltwater.

- a) Using gloved hands, open the foil pouch one at a time and remove the **Belzona 9631** roll.
- b) Apply to the underwater repair area as in steps f, g, and h in section 2.3 above.
- c) Allow the repair to cure.

3 INSPECTION

- a) Upon completion of the application, visually inspect the repair to ensure that:
 - **Belzona 9631** is smooth without any creases or loose sections.
 - The ends of **Belzona 9631** land on prepared substrate and are tightly adhered.
- b) Apply more **Belzona 9631** if needed in accordance with section 2.4 above.

4 CURING AND CLEANING**4.1 CURING**

Belzona 9631 should be allowed to ambient or underwater cure for 45 – 60 min. to achieve full mechanical strength. Curing may take longer in dry climates or cold temperatures.

If a release film or tourniquet were used for tightening the repair, it should carefully be removed upon completion of curing time.

4.2 CLEANING

Mixing tools should be cleaned immediately after use with **Belzona 9111** or any other effective solvent e.g., methyl ethyl ketone (MEK). Application tools and brushes should be cleaned using a suitable solvent such as **Belzona 9121**, MEK, acetone, or cellulose thinners.

HEALTH & SAFETY INFORMATION

Please read and make sure you understand the relevant Safety Data Sheets.

The technical data contained herein is based on the results of long-term tests carried out in our laboratories and to the best of our knowledge is true and accurate on the date of publication. It is however subject to change without prior notice and the user should contact Belzona to verify the technical data is correct before specifying or ordering. No guarantee of accuracy is given or implied. We assume no responsibility for rates of coverage, performance or injury resulting from use. Liability, if any, is limited to the replacement of products. No other warranty or guarantee of any kind is made by Belzona, express or implied, whether statutory, by operation of law or otherwise, including merchantability or fitness for a particular purpose.

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